

25 Historical Highlights: Use of the MMPI/MMPI-2 for PTSD Evaluations¹

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Hundreds of articles have been published on the use of the MMPI and MMPI-2 scales to assess patients who develop mental health problems in response to stressful life events. The following summaries highlight the history of research on post-traumatic stress using scales from the MMPI-2, and its predecessor, the MMPI. The articles selected for the Highlights provide valuable information for understanding this test application. References are provided below for interested persons to follow-up for more detail. In addition to the MMPI-2 Clinical Scales (particularly D, Pt, Hs and Hy) developed by Hathaway and McKinley in the 1940s, several other MMPI-2 scales have been shown to be useful for PTSD evaluations. These include the PTSD scale (Pk) by Keane and colleagues, the Ps scale by Schlenger and Kulka, the Cooke-Medley Hostility scale (Ho), and the Anger Content Scale (ANG). Elevations on MMPI and MMPI-2 measures of depression, anxiety and somatization are apparent beginning with the earliest studies of patients with PTSD, which is consistent with other research on comorbidity. Readers should note that little, if any, of these historical highlights apply to the scales on the 2008 MMPI-2-RF, a shortened test that does not share this history of validation for the assessment of PTSD.

- 1943 Shortly after the MMPI was published, Leverenz conducted the first clinical evaluation of the test with military personnel undergoing treatment in a military psychiatric service station during World War II.
- 1948 The MMPI was administered as part of a unique study of experimenter-induced severe stress to determine the effects of semi-starvation on human health and the best methods for rehabilitation of victims of the severe famine in Europe and Asia as a result of World War II. The MMPI Clinical Scales were sensitive to changes during the experimental-induced stress. Depression (D), Hysteria (Hy), and Hypochondriasis (Hs) demonstrated significant elevations. Notably, the F Scale also increased during the period of severe stress. Brozek and Schiele were the first to recognize that elevated F scale scores can occur among individuals who have

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- experienced severe environmental stress and can reflect the fact that the subjects said unusual things about themselves because of the changes that had taken place from their stressful experience. This study showed that some items on the F scale are sensitive to psychological problems associated with stress. Thus, the elevation level of the F scale is important to consider in any evaluation of the credibility of an individual's responding as noted in later research.
- 1948 During World War II, Jennings administered the MMPI to a large group of flying officers at a combat crew replacement center in England prior to their assignment in a heavy bombardment group. He retested 516 officers at the end of deployment in order to make a comparison of the original MMPI scores with follow-up scores for those encountering a breakdown under combat stress. He found that 404 of the sample produced normal range profiles. Sixty-one percent of the pilots with psychiatric breakdowns had abnormally high MMPI profiles or elevated L and F scores as compared to only 17% of the successful flyers. The MMPI was also administered to another group of 45 men who had been grounded for psychiatric reasons. Of the 39 men who had valid scores, 6 (15.4%) had normal scores, while 33 (84.6%) had abnormal clinical scale scores. The MMPI was found to provide valuable information with regard to evaluating pilots in military aviation.
- 1952 The importance of understanding anxiety and instability among military pilots gained further understanding in a project undertaken by Holtzman and Bitterman. They provided a valuable overview of the utility of the MMPI scales in assessing reaction to stress among pilots in World War II, elaborating on Jennings's 1948 study. Central to evaluating military pilots engaged in combat is the study of anxiety and its effects upon behavior.
- 1976 Merbaum and Hefez demonstrated the cross-cultural generalizability of the MMPI for assessing soldiers with PTSD from combat experience with a sample of Israeli soldiers hospitalized for psychiatric problems during the Yom Kippur war. The symptoms expressed were extreme depression, anxiety, and extensive physical complaints with significant elevations on D, Pt, Hs and Sc. The interview reports are highly consistent with the MMPI test results. These data emphasize the prolonged effect of combat stress and highlighted the special problems that these men experienced in reentering their social community.
- 1982 Roberts, Penk, Gearing, Robinowitz, Dolan and Patterson studied the comorbidity of PTSD in a sample of 274 Vietnam-era veterans seeking treatment for substance abuse. This sample was divided into three groups: veterans with evidence of PTSD were compared to a non-PTSD group with combat experience and to a noncombat group of Vietnam-era veterans. PTSD veterans in substance abuse treatment scored higher than the other two groups on the Clinical Scales Pa, Pd, Si and the Wiggins Content Scales of Social Maladjustment, Family Problems, and Manifest Hostility.
- 1984 The MMPI is a valuable aid in distinguishing between patients with posttraumatic stress and those with functional disorders. Chaney, Williams, Cohn, and Vincent

- evaluated MMPI scores of post-trauma patients, patients with organically based illnesses, and patients with psychogenic pain/functional complaints using the MMPI. They reported differences among the groups on the *Hy*, *Ma*, and *F* scales. The post-trauma and organic groups showed marked elevation over those in the psychogenic group. The results suggested that MMPI profiles of patients with posttraumatic stress more closely resemble the profiles of patients who have organic disease with pain caused by organic pathology than the profiles of patients with psychogenic pain and/or hypochondriasis.
- 1984 Keane, Malloy and Fairbank conducted an empirical evaluation of Vietnam combat veterans in a VA hospital who had been diagnosed with posttraumatic stress (PTSD) group compared with a group of veterans with no PTSD problems. They found that the basic clinical profiles demonstrated that PTSD patients had overall higher mean elevations, and correctly classified 74% of patients in each group. In addition, they developed an MMPI scale (referred to as the Pk scale) that empirically differentiated those with stress related disorders from veterans not experiencing PTSD. Keane et al. cross-validated the specific PTSD scale finding that it improved diagnostic hit rates of PTSD to 82% of Ss.
- 1985 Distinguishing genuine from factitious PTSD symptoms has been an important focus in PTSD research with the MMPI. Fairbank, McCaffrey and Keane administered the MMPI to Vietnam veterans with posttraumatic stress (PTSD) and to two comparison groups that were instructed to fabricate the symptoms of PTSD. These two feigning symptom groups were composed of well-adjusted Vietnam veterans and male mental health professionals who were familiar with the diagnostic criteria of PTSD. Both groups with factitious PTSD produced elevations on scale F and Pk. Scale F was found to be successful at detecting fabricated symptoms. It is important to consider the elevation of the F scale in determining protocol validity. Using a discriminant function analysis of selected scale scores and an empirically derived decision rule they were able to correctly classify over 90% of the genuine PTSD patients over the feigned protocols.
- 1987 Long-term follow-up of PTSD symptoms has been the focus of a number of studies with the MMPI. Goldstein, Van Kammen, Shelly and Miller conducted an evaluation of 41 survivors of imprisonment by the Japanese military during World War II. Interview data indicated that these former prisoners showed manifestations of PTSD even though 40 years had passed since their experience. They showed sleep disturbance, frequent nightmares, and anxiety. Half of the men met the full criteria of PTSD. Their MMPI profiles indicated significant psychopathology that was characterized by an anxiety state showing high elevations on D, Hs, Hy, Pt, and Sc.
- 1990 McFall, Smith, Roszell and Tarver conducted an evaluation of the convergent validity of several tests of posttraumatic stress (PTSD) against criteria of the DSM-III—R for PTSD in Vietnam combat veterans. They reported significant positive correlations between (1) the MMPI Pk scale developed by Keane et al., 2) the Mississippi Scale for Combat-Related PTSD and (3) the Impact of Events

- Scale and the number of DSM-III—R symptoms endorsed. This finding supports the validity of psychometric instruments as measures of PTSD symptom severity. Predicted relationships between stressors and symptoms were supported by significant correlations between degree of traumatic combat exposure and DSM-III—R and psychometric indexes of PTSD.
- 1991 Eberly, Harkness and Engdahl studied response to trauma among a large sample of World War II POWs. They used the MMPI in assessing POW's lifetime and current diagnoses of PTSD in response to trauma and their negative affect in adjustment to traumatic conditions. The Psychasthenia, Welsh A (Anxiety) (Welsh, 1956) and Schizophrenia were particularly strong in assessing these problems.
- 1991 The co-morbidity of PTSD and depression was studied using the MMPI with WW II POWs by Engdahl, Speed, Eberly and Schwartz. They concluded that a high percentage of former prisoners showed a high frequency of comorbid psychiatric disorders and a current adjustment characterized by traits of depression, anxiety, and somatization. MMPI scales measuring Hypochondriasis, Depression, Hysteria, Psychasthenia, and Schizophrenia were clinically elevated. Only 19% of the POWs were free from all lifetime psychiatric diagnoses, and few had MMPI profiles within "normal limits." Their study showed that depression is a manifestation of being chronically ill with PTSD.
- 1991 The ability of MMPI scales at discriminating PTSD among POW survivors was further evaluated. Sutker, Bugg and Allain studied the prevalence of posttraumatic stress disorder (PTSD) in former World War II and Korean War prisoners of war. Their study determined the extent to which a psychometric test battery, including selected scales of the MMPI, including the Pk PTSD scale and PTSD decision rule; the Beck Depression Inventory; and the State-Trait Anxiety Inventory (STAI) were able to distinguish PTSD and non-PTSD diagnosed groups. POW survivors assigned diagnoses of PTSD differed significantly from their nondiagnosed counterparts on most indices of personality and mood functioning. Group differentiation was achieved with 77% effectiveness by discriminant function entry of four variables, scores on the STAI A-Trait scale and MMPI scales *Sc*, *F*, and PTSD.
- 1992 The relationship between service-connection (financial compensation) and exaggeration of posttraumatic stress disorder (PTSD) symptoms was examined by Jordan, Nunley and Cook. They studied inpatient Vietnam combat veterans in PTSD treatment between 3 clinical groups: Veterans who were financially compensated for PTSD, veterans who were financially compensated for physical or other mental problems, and veterans who were not financially compensated. Results indicated that those who were not service-connected did not exaggerate symptoms on the MMPI F-scale (Validity) more than those who were service connected. They also reported that F scale scores reported for inpatient PTSD were higher than previously established cut-off criteria found chiefly in outpatient populations.

- 1994 The role of anger in association with PTSD was shown to be addressed by MMPI-2 content-based Anger scale. Munley, Bains, Frazee and Schwartz evaluated MMPI-2 profiles of veterans diagnosed with posttraumatic stress disorder (PTSD) compared with a non-PTSD group of veteran patients receiving inpatient treatment for other mental disorders. All participants were men. Three multivariate analyses of variance (MANOVAs) were conducted comparing the two groups on several MMPI-2 scales. The MANOVA comparing the 2 groups on the 12 supplemental scales and the 15 content scales were significant. Significant univariate supplemental scale differences were found on 2 MMPI-2 scales, the Keane PTSD scale (Pk) and the Post-Traumatic Stress Disorder (Ps) Scale, with the PTSD patients scoring higher on Pk and Ps. They reported significant univariate content scale differences for the Anger scale, with the PTSD patients scoring higher.
- 1994 Anger among veterans with post-traumatic stress disorder was further explored by examining potential health related outcomes. Kubany, Gino, Denny and Torigoe studied the association between the Cook-Medley hostility scale of the MMPI and scores and posttraumatic stress (PTSD) among Vietnam and other-era veterans. The Cook-Medley scores were highly associated with MMPI PTSD scale scores, and Vietnam Era veterans obtained higher scores than veterans from other eras. Vietnam veterans with PTSD disability ratings obtained very high Cook-Medley scores that were higher than Vietnam Era veterans without rated PTSD. Findings indicated that the cynical hostility literature has significant relevance for the study of PTSD.
- 1995 Stress-related mental health problems are often presented in personal injury claims. MMPI-2 results of worker's compensation claimants who present with psychological problems following work harassment situations were evaluated. Gandolfo studied the use MMPI-2 profiles for distinguishing among worker's compensation claimants with psychological problems who presented with stressful work-related harassment or nonharassment complaints. The analysis of MMPI-2 mean scores showed that clients in the harassment group scored significantly higher than did Ss in the nonharassment group on Scale 6 of the MMPI-2. This finding was interpreted to mean that the harassment group was more oversensitive, suspicious, and angry than the other group. There was no evidence in the study that showed that the harassment group was more likely to exaggerate or malingering than the nonharassment group. The MMPI-2 profile pattern for both groups was otherwise very similar to those found in previous studies that reported results of MMPI worker's compensation claimants who present with psychological problems.
- 1996 The need to carefully evaluate PTSD among compensation seeking veterans was noted. Frueh, Smith and Barker studied differences between compensation seeking (CS) veterans and noncompensation seeking (NCS) veterans on the MMPI-2 and other psychological measures in combat veterans who were evaluated for posttraumatic stress disorder (PTSD) at an outpatient Veterans Affairs hospital PTSD clinic. Patients were grouped on the basis of their

- compensation seeking status, with 69% classified as CS for PTSD. The CS veterans achieved significantly more pathological scores across a wide range of psychological inventories and MMPI-2 validity indices, although they did not differ in frequency of PTSD diagnoses from NCS veterans. Implications of these findings are discussed, and clinicians are advised to be aware of the compensation seeking status of combat-veterans being evaluated for PTSD.
- 1999 Further cross-validation of MMPI-2 indices describing PTSD symptoms was provided. Baldrachi, Hilsenroth, Arsenault, Sloan and Walter provided a cross-validation of the use of the MMPI-2 in assessing PTSD in a sample of veterans. Their study supported and extended previous research using the MMPI-2 and its supplemental scales in detecting symptoms of PTSD. They found that the Ps and the Pk scales contributed substantially to detecting PTSD symptoms.
- 2000 The need to evaluate potential malingering among PTSD claimants was noted in studies by Elhai and colleagues. For example, Elhai, Gold, Frueh and Gold conducted a cross-validation of a previous study (Elhai, Gold, Sellers, and Dorfman, 2001) using combat-related war veterans in an outpatient posttraumatic stress disorder (PTSD) treatment program to evaluate genuine from malingered PTSD on the MMPI-2 . The MMPI-2 scores were compared with those of adult college students instructed and trained to malingering PTSD. MMPI-2 over-reporting validity scales examined were F, |F-Fb|, F-K, F(p), Ds₂, O-S, OT, and FBS. They used a stepwise discriminant analysis identified F, |F-Fb|, F-K, Ds₂, O-S, and OT as the best malingering predictors. A predictive discriminant analysis yielded good hit rates for the model with impressive cross-validation results. The authors discussed clinical implications for using the MMPI-2 to distinguish malingered PTSD from combat-related PTSD.
- 2001 The use of the PTSD scale (Pk) was found to be effective in women who experienced domestic abuse. Morrell and Rubin conducted a study to examine women who had survived domestic violence using the MMPI-2 and found unique signs of suffering from posttraumatic stress disorder. The MMPI-2 was administered to 93 women domestic violence survivors. The results showed that the MMPI-2 is sensitive to PTSD symptoms in women who had experienced domestic violence. Significant differences between the PTSD and NPTSD groups on the MMPI-2 validity, clinical, and PK-PTSD scales found that the MMPI-2 was sensitive to PTSD symptomology. The Pk scale also showed sensitivity to PTSD symptoms by generating rates of diagnostic accuracy similar to research reported for Vietnam veterans experiencing PTSD.
- 2003 Considerable research has been devoted to assessing overreporting of symptoms in PTSD evaluations. Franklin, Repasky, Thompson, Shelton and Uddo studied response styles of veterans seeking compensation for PTSD. Veterans were classified as having a valid or over-reporting response style based on their scores on three MMPI-2 validity scales that measure over-reporting *F*, *F(p)*, *F-K*. Sixteen percent of veterans had valid scores on all three scales. The number of

- veterans classified as having an over-reporting response style differed depending on which scale was used. The results of this study supported the value of using multiple validity scales to measure response style. Veterans who were and were not classified as over-reporters were compared on measures of combat exposure, PTSD, and depression.
- 2009 The use of the MMPI-2 in assessing PTSD among people injured in workplace incidents and victims of criminal events provided a valuable perspective. Sherliffe and Colotla studied MMPI-2 profiles of workers who had been diagnosed with posttraumatic stress disorder (PTSD) as a result of workplace problems and a control group of workers with chronic pain. They found significant differences between the PTSD groups and the control group. They compared the PTSD profiles according to exposure to two different kinds of traumatic incidents: industrial accidents or criminal events and reported that differences in profile elevations appeared to be based on the type of event: The level of distress and fear is greater in PTSD victims of crime, and the results also suggest that victims of crime are more suspicious and guarded compared with accident victims. There were statistically significant differences between the means of the Crime and Accident groups on scales *F*, *D*, *Pa*, and *Sc*. Theoretically based reasons for the differences in profile elevations between the two PTSD groups are discussed.
- 2014 Blevins, Lee and Weathers provide a discussion of recommendations for best practices for the assessment of PTSD and anxiety disorders in veterans and incorporates interpretation of MMPI-2.

References

- Baldrachi, R., Hilsenroth, M., Arsenault, L., Sloan, P., & Walter, C. (1999). MMPI-2 assessment of varying levels of posttraumatic stress in Vietnam combat veterans. *Journal of Psychopathology and Behavioral Assessment, 21*, 109-116.
- Blevins, C.A., Lee, D.J., Weathers, F.W. (2014). Psychological assessment of veterans with PTSD and other anxiety disorders. In S.S. Bush (Ed.), *Psychological assessment of veterans*. (pp. 297-323). New York, NY, US: Oxford University Press.
- Brozek, J. H., Schiele B. (1948). Clinical significance of the Minnesota Multiphasic F scale evaluated in experimental neurosis. *American Journal of Psychiatry, 105*, 259-266.
- Butcher, J. N., Graham, J. R., Williams, C. L., & Ben-Porath, Y. S. (1990). *Development and use of the MMPI-2 Content Scales*. Minneapolis, MN.: University of Minnesota Press.

- Chaney, H. S., Williams, S. G., Cohn, C. K., & Vincent, K. R. (1984). MMPI results: A comparison of trauma victims, psychogenic pain, and patients with organic disease. *Journal of Clinical Psychology, 40*, 1450-1454.
- Eberly, R. E., Harkness, A. R., & Engdahl, B. E. (1991). An adaptational view of trauma response as illustrated by the prisoner of war experience. *Journal of Traumatic Stress, 4*, 363-380.
- Elhai, J. D., Gold, P. B., Frueh, B. C., & Gold, S. N. (2000). Cross-validation of the MMPI-2 in detecting malingered posttraumatic stress disorder. *Journal of Personality Assessment, 75*, 449-457.
- Elhai, J. D., Gold, S. N., Sellers, A. H., & Dorfman, W. I. (2001). The detection of malingered posttraumatic stress disorder with MMPI-2 Fake Bad Indices. *Assessment, 8*(2), 221- 236.
- Engdahl, B. E., Speed, N., Eberly, R. E., & Schwartz, J. (1991). Comorbidity of psychiatric disorders and personality profiles of American World War II prisoners of war. *Journal of Nervous & Mental Disease, 179*, 181-187.
- Fairbank, J. A., McCaffrey R., & Keane T. M. (1985) Psychometric detection of fabricated symptoms of post-traumatic stress disorder. *American Journal of Psychiatry, 142*, 501–503.
- Franklin, C. L., Repasky, S. A., Thompson, K. E., Shelton, S. A., & Uddo, M. (2003). Assessment of response style in combat veterans seeking compensation for posttraumatic stress disorder. *Journal of Traumatic Stress, 16*, 251-255.
- Frueh, B. C., Smith, D. W. & Barker, S. E. (1996). Compensation seeking status and psychometric assessment of combat veterans seeking treatment for PTSD. *Journal of Traumatic Stress, 9*(3), 427-440.
- Gandolfo, R. (1995). MMPI-2 profiles of worker's compensation claimants who present with complaints of harassment. *Journal of Clinical Psychology, 51*(5), 711-715.
- Goldstein, G., Van Kammen, W., Shelly, C., & Miller, D. J. (1987). Survivors of imprisonment in the Pacific theater during World War II. *American Journal of Psychiatry, 144*, 1210-1213.
- Holtzman, W. H. Bitterman, M. E. (1952). Psychiatric screening of flying personnel: VI, Anxiety and reactions to stress (Rep. No. 6). [US Air Force, School of Aerospace Medicine (USAFSAM)].
- Jennings, L.S.(1948). MMPI: Differentiation of Psychologically Good and Poor Combat Risks Among Flying Personnel. *Aviation Medicine. 19*:222-226.

- Jordan, R. G., Nunley, T. V., & Cook, R. R. (1992). Symptom exaggeration in a PTSD inpatient population: Response set or claim for compensation. *Journal of Traumatic Stress, 5*, 633-642.
- Keane, T. M., Malloy, P. F., & Fairbank, J. A. (1984). Empirical development of an MMPI subscale for the assessment of posttraumatic stress disorder. *Journal of Consulting and Clinical Psychology, 52*, 888-891.
- Kubany, E. S., Gino, A., Denny, N. R., & Torigoe, R. Y. (1994). Relationship of cynical hostility and PTSD among Vietnam veterans. *Journal of Traumatic Stress, 7*, 21-31.
- Leverenz, C.W. (1943). MMPI; An Evaluation of Its Usefulness in the Psychiatric Service of a Station Hospital. *War Med. 4*, 618-629.
- McFall, M. E., Smith, D. E., Roszell, D. K., & Tarver, D. J. (1990). Convergent validity of measures of PTSD in Vietnam combat veterans. *American Journal of Psychiatry, 147*, 645-648.
- Merbaum, M. & Hefez, A. (1976). Some personality characteristics of soldiers exposed to extreme war stress. *Journal of Consulting & Clinical Psychology, 44*, 1-6.
- Morrell, J. S. Rubin, L. J. (2001). The MMPI-2, posttraumatic stress disorder, and women domestic violence survivors. *Professional Psychology-Research & Practice, 32*.
- Munley, P. H., Bains, D. S. F. J. S., Frazee, J., & Schwartz, L. T. (1994). Inpatient PTSD treatment: A study of pretreatment measures, treatment dropout, and therapist ratings of response to treatment. *Journal of Traumatic Stress, 7*, 319-325.
- Roberts, W. R. Penk, W. E., Gearing, M. L., Robinowitz, R., Dolan, M. P. & Patterson, E. T. (1982). Interpersonal problems of Vietnam combat veterans with symptoms of posttraumatic stress disorder. *Journal of Abnormal Psychology, 91*, 444-450.
- Schlenger, W, E. & Kulka, R. A. (1989). PTSD scale development for MMPI-2. Research Triangle Park, NC: Research Triangle Institute.
- Shercliffe, R. J., & Colotla, V. (2009). MMPI-2 profiles in civilian PTSD: An examination of differential responses between victims of crime and industrial accidents. *Journal of Interpersonal Violence, 24*(2), 349-360.
- Sutker, P. B. Bugg, F. and Allain, A. N. (1991). Psychometric prediction of PTSD among POW survivors. *Psychological Assessment, 3*, 105-110.
- Welsh, G. S. (1956). Factor dimensions A and R. In G. S. Welsh & W. G. Dahlstrom (Eds.). *Basic readings on the MMPI in psychology and medicine*. (pp. 264-281). Minneapolis: University of Minnesota Press.

